

Appl. No. 10/774,551

Amdt. Dated February 3, 2006

Reply to Final Office Action of October 5, 2005

Attorney Docket No. 81716.0120

Customer No.: 26021

REMARKS/ARGUMENTS:

Claims 9-11 and 16-21 are pending in the application. Reexamination and reconsideration of the application, in view of the following remarks, are respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 9-11, 16, 17, and 21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Inoue, U.S. Patent No. 4,816,323. The Applicant respectfully traverses this rejection

Claim 9 is as follows:

A ceramic circuit board comprising:

a ceramic substrate having a through hole;

a metal column arranged within the through hole; and

metal circuit plates attached to both surfaces of the ceramic substrate in such a way as to stop up the through hole,

wherein the metal circuit plates attached to both surfaces of the ceramic substrate are connected to each other by the metal column,

and wherein, between an inner wall surface of the through hole and an outer wall surface of the metal column is secured a space defining a cavity.

Applicant respectfully submits that Inoue cannot anticipate claim 9 because Inoue fails to teach that "between an inner wall surface of the through hole and an outer wall surface of the metal column is secured a space defining a cavity." The space that defines a cavity in claim 9 offers the advantage that thermal expansion between the ceramic substrate and the metal column is accommodated. "Thus, even if, when heat is applied to the ceramic circuit board, the outer wall surface of the

Appl. No. 10/774,551
Amdt. Dated February 3, 2006
Reply to Final Office Action of October 5, 2005

Attorney Docket No. 81716.0120
Customer No.: 26021

metal column is expanded and swollen due to the difference in the thermal expansion coefficient between the ceramic substrate and the metal column, the resultant expansion can be successfully accommodated by the space. This helps prevent the inner wall surface of the through hole from being pressed and expanded by the outer wall surface of the metal column, and thereby prevent occurrence of crack or fracture in the ceramic substrate. As a result, the ceramic circuit board can be operated normally and stably for a longer period of time." (Applicant's specification, at p. 12, lines 14-23).

Inoue is directed to a multilayer wiring substrate for packaging a plurality of electronic elements. (Inoue, 1:5-6). In Inoue, as shown in Figure 1, Through-holes 20 of a diameter of 0.3 mm (millimeters) are bored a grid pattern to penetrate through the substrate 1 from its upper surface to its lower surface. (Inoue, at 2:5-9) Wall surfaces 20a of the section 1 to define through-holes 20 that are coated with polytetrafluoroethylene films 21. (Inoue, at 2:9-11) Through-hole wirings 22 made of copper are formed within spaces surrounded by the films 21. (Inoue, at 2:11-13) Thus, although a space is also formed between an inner wall surface of a through hole 20 and an outer wall surface of a wiring 22 in Inoue, the space and is filled with a polytetrafluoroethylene films 21, as shown in Figures 1 and 2E of Inoue. On the other hand, in the present invention, the space is not filled with the film material, or any other material. Inoue does not disclose any structure in which the space defines a cavity as required by claim 9. In the present invention, the space between the metal column and the ceramic substrate defines a cavity, resulting the benefits discussed above. The Applicant further emphasizes that a cavity by definition represents an "unfilled space."

In light of the foregoing, Applicant respectfully submits that Inoue cannot anticipate or render obvious claim 9, because Inoue fails to teach or suggest each

Appl. No. 10/774,551
Amdt. Dated February 3, 2006
Reply to Final Office Action of October 5, 2005

Attorney Docket No. 81716.0120
Customer No.: 26021

and every claim limitation. As such, withdrawal of the rejection and allowance of amended claim 9 is respectfully requested.

Claims 10, 11, 16, 17, and 21 depend from claim 9 and cannot be anticipated or rendered obvious for at least the same reasons as claim 9. Withdrawal of the rejection and allowance of claims 10, 11, 16, 17, and 21 is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claims 18, 19, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Inoue, U.S. Patent No. 4,816,323. The Applicant respectfully traverses this rejection

Claims 18, 19, and 20 depend from claim 9 and cannot be rendered obvious for at least the same reasons as claim 9. Withdrawal of the rejection and allowance of claims 18, 19, and 20 is thus respectfully requested.

Applicant believes the foregoing amendments comply with requirements of form and thus may be admitted under 37 C.F.R. § 1.116(b). Alternatively, if these amendments are deemed to touch the merits, admission is requested under 37 C.F.R. § 1.116(c). In this connection, these amendments were not earlier presented because they are in response to the matters pointed out for the first time in the Final Office Action.

Lastly, admission is requested under 37 C.F.R. § 1.116(b) as presenting rejected claims in better form for consideration on appeal.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, in view of the foregoing remarks, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los

Appl. No. 10/774,551

Amdt. Dated February 3, 2006

Reply to Final Office Action of October 5, 2005

Attorney Docket No. ~~81716.0120~~

Customer No.: 26021

Angeles, California telephone number (213) 337-6810 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

HOGAN & HARTSON L.L.P.

Date: February 3, 2006

By: 

Lawrence J. McClure

Registration No. 44,228

Attorney for Applicant(s)

500 South Grand Avenue, Suite 1900

Los Angeles, California 90071

Phone: 213-337-6700

Fax: 213-337-6701